

Declaration, Power Of Attorney and Petition

Page 1 of 3

WE (I) the undersigned inventor(s), hereby declare(s) that:

My residence, post office address and citizenship are as stated below next to my name,

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled

MURINE α(1,3)FUCOSYLTRANSFERASE Fuc-TVII, DNA ENCODING THE SAME,
METHOD FOR PREPARING THE SAME, ANTIBODIES RECOGNIZING THE SAME,
IMMUNOASSAYS FOR DETECTING THE SAME, PLASMIDS CONTAINING SUCH DNA,
AND CELLS CONTAINING SUCH A PLASMID

the specification of which

is attached hereto.

was filed on MARCH 8, 1996 as

Application Serial No. 08/613,098

and amended on _____.

was filed as PCT international application

Number _____

on _____,

and was amended under PCT Article 19

on _____ (if applicable).

We (I) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed. Prior Foreign Application(s)

Application No.	Country	Day/Month/Year	Priority Claimed
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No

We (I) hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

We (I) hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

Application Serial No.	Filing Date	Status (pending, patented, abandoned)

And we (I) hereby appoint: Norman F. Oblon, Registration Number 24,618; Marvin J. Spivak, Registration Number 24,913; C. Irvin McClelland, Registration Number 21,124; Gregory J. Maier, Registration Number 25,599; Arthur I. Neustadt, Registration Number 24,854; Richard D. Kelly, Registration Number 27,757; James D. Hamilton, Registration Number 28,421; Eckhard H. Kuesters, Registration Number 28,870; Robert T. Pous, Registration Number 29,099; Charles L. Gholz, Registration Number 26,395; Vincent J. Sunderdick, Registration Number 29,004; William E. Beaumont, Registration Number 30,996; Steven B. Kelber, Registration Number 30,073; Robert F. Gnuse, Registration Number 27,295; Jean-Paul Lavallee, Registration Number 31,451; William B. Walker, Registration Number 22,498; Timothy R. Schwartz, Registration Number 32,171; Stephen G. Baxter, Registration Number 32,884; Martin M. Zoltick, Registration Number 35,745; Robert W. Hahl, Registration Number 33,893; Richard L. Treanor, Registration Number 36,379; Steven P. Weihrouch, Registration Number 32,829; John T. Goolkasian, Registration Number 26,142; Marc R. Labgold, Registration Number 34,651; William J. Healey, Registration Number 36,160; and Richard L. Chinn, Registration Number 34,305; our (my) attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and we (I) hereby request that all correspondence regarding this application be sent to the firm of OBLON, SPIVAK, McCLELLAND, MAIER & NEUSTADT, P.C., whose Post Office Address is: Fourth Floor, 1755 Jefferson Davis Highway, Arlington, Virginia 22202.

We (I) declare that all statements made herein of our (my) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Shunji NATSUKA

NAME OF FIRST ~~SOKE~~ INVENTOR

Signature of Inventor

May 12 . 1996

Date

Residence: 1423 Natalie Lane, #79

Citizen of: JAPAN

Post Office Address: Same as above

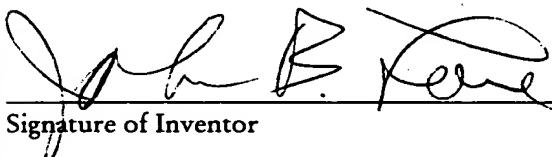
Kevin M. GERSTEN

NAME OF SECOND JOINT INVENTOR

Signature of Inventor

Date

John B. Lowe

NAME OF THIRD JOINT INVENTOR

Signature of Inventor

Date

NAME OF FOURTH JOINT INVENTOR

Signature of Inventor

Date

NAME OF FIFTH JOINT INVENTOR

Signature of Inventor

Date

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Ann Arbor, Michigan 48105

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Post Office Address: Same as above

Residence:

Citizen of:

Post Office Address:

Residence:

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Application Serial No.

Filing Date

Status (pending, patented,
abandoned)

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Shunji NATSUKA

NAME OF FIRST ~~SOLE~~ INVENTOR

Residence: 1423 Natalie Lane, #79

Signature of Inventor

Citizen of: JAPAN

Date

Post Office Address: Same as above

Kevin M. GERSTEN

NAME OF SECOND JOINT INVENTOR

Kevin M. Gersten

Signature of Inventor

6/18/96

Date

John B. Lowe

NAME OF THIRD JOINT INVENTOR

Signature of Inventor

Date

NAME OF FOURTH JOINT INVENTOR

Signature of Inventor

Date

NAME OF FIFTH JOINT INVENTOR

Signature of Inventor

Date

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Citizen of: United States

Post Office Address: Same as above

Residence: 2472 Antietam Drive

Ann Arbor, Michigan 48105

Citizen of: United States

Post Office Address: Same as above

Residence: _____

Citizen of: _____

Post Office Address: _____

Residence: _____

Citizen of: _____

Post Office Address: _____

2363-114-55

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF:

SHUNJI NATSUKA ET AL

: EXAMINER: NOLAN

SERIAL NO. 08/613,098

:

FILED: MARCH 8, 1996

: GROUP ART UNIT: 1644

FOR: MURINE ALPHA (1,3)

FUCOSYLYLTRANSFERASE FUC-TVII,
DNA ENCODING THE SAME,
METHOD FOR PREPARING THE
SAME, ANTIBODIES RECOGNIZING
THE SAME, IMMUNOASSAYS FOR
DETECTING THE SAME, PLASMIDS
CONTAINING SUCH DNA, AND CELLS
CONTAINING SUCH A PLASMID

DECLARATION UNDER 37 C.F.R. §1.132

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR: _____

Now comes John B. Lowe who deposes and states:

1. That I am a named inventor of U. S. Patent Application Serial No. 08/613,098.
2. That I am Professor of Pathology, University of Michigan Medical School and Investigator, Howard Hughes Medical Institute.
3. That I am a graduate of University of Utah College of Medicine and received my M.D. in the year 1980.
4. That I have been employed by the University of Michigan for 11 years as a Professor of Pathology.

5. That a copy of my curriculum vitae is attached hereto and is incorporated into and is part of this Declaration.

6. That I have been engaged in research involving the cloning of glycosyltransferase genes, including both human and murine fucosyltransferases, for 12 years.

7. That, based on my experience in the field of glycosyltransferase research, it is my understanding that the person having ordinary skill in the art of glycosyltransferase research would typically have a Ph.D. or M.D. and 5 years of postdoctoral or research experience in biochemistry or molecular biology.

8. That it is my opinion that the combined teachings of K. Sasaki et al, "Expression Cloning of a Novel α 1,3-Fucosyltransferase That Is Involved in Biosynthesis of the Sialyl Lewis x Carbohydrate Determinants in Leukocytes," The Journal of Biological Chemistry, vol. 269, pp. 14730-14737 (1994) (Sasaki et al) and K. Gersten, "Structure, Function, and Tissue-Specific Expression Patterns of Murine α (1-3)Fucosyltransferase Genes," The Journal of Cellular Biochemistry, Supplement 16D, p. 170, Abstract No. P 407 (1992), would not have instilled in the person having ordinary skill in the art of glycosyltransferase research, at the time U. S. Patent Application Serial No. 08/613,098 was filed (March 8, 1996), a reasonable expectation of success for the existence of a murine analogue to human Fuc-TVII.

9. That my opinion is based, in part, on the experiences of the researchers working in my own laboratory. The genes encoding human Fuc-TIII, Fuc-TV, and Fuc-TVI, were isolated in my laboratory in 1988, 1990, and 1991, respectively. For 5 years, researchers in my laboratory have attempted to clone the genes encoding the murine counterparts of Fuc-TIII, Fuc-TV, and Fuc-TVI. The efforts spent in attempting to clone the genes encoding the murine counterparts of Fuc-TIII, Fuc-TV, and Fuc-TVI have been extensive and have included:

(A) Mammalian expression cloning (using an approach virtually identical to that described in Kukowska-Latallo et al, Genes and Development, vol. 4, pp. 1288-1303 (1990));

(B) Cross-hybridization approaches using bacteriophage libraries containing mouse genomic DNA (as described in Weston et al, The Journal of Biological Chemistry, vol. 267, pp. 4152-4169 (1992) and Weston et al, The Journal of Biological Chemistry, vol. 267, pp. 24575-24584 (1992));

(C) The polymerase chain reaction and degenerate PCR primers designed to correspond to most highly conserved portions of all known mammalian $\alpha(1.3)$ fucosyltransferases; and

(D) Chromosome walking techniques. In this approach, a large number of cloned segments of the mouse chromosome that corresponds to the part of human chromosome 19 where the genes for Fuc-TIII, Fuc-TIV, and Fuc-TVI are located. This segment was then exhaustively screened for the presence of Fuc-TIII, Fuc-TIV, and Fuc-TVI homologues, also using the PCR and hybridization approaches used above. Only one fucosyltransferase-cross-hybridizing DNA sequence was identified in this large segment of the mouse chromosome and it turned out to be the mouse pseudogene that had been cloned some years ago.

Thus, even though human Fuc-TIII, Fuc-TIV, and Fuc-TVI are known, no mouse analogues are known. Thus, the disclosure of human Fuc-TVII in Sasaki et al would not have instilled an expectation of the existence of murine Fuc-TVII.

10. That my opinion is, in part, based on the experiences of other researchers. Other researchers have found that there exists only a single bovine fucosyltransferase gene which corresponds to the human genes for Fuc-TIII, Fuc-TV, and Fuc-TVI (see: A. Oulmouden et al, The Journal of Biological Chemistry, vol. 272, pp. 8764-8773 (1997)). Some of the same researchers have concluded that the human genes for Fuc-TIII, Fuc-TV, and Fuc-TVI arose as

a result of gene duplication between: (i) the great mammalian radiation 80 million years ago and (ii) the separation of man and chimpanzee 10 million years ago (see: M. Costache et al, *The Journal of Biological Chemistry*, vol. 272, pp. 29721-29728 (1997)). Since the mouse can be placed much "earlier" on the "evolutionary tree," it is logical to conclude that the mouse does not have functional versions of Fuc-TIII, Fuc-TV, and Fuc-TVI. It is also logical to conclude that the skilled artisan would not have a reasonable expectation of success for the existence of a murine analogue based on the mere disclosure of a particular human fucosyltransferase.

11. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

12. Further deponent saith not.



Signature _____


Date 11-4-98